

Ref. No. PA-26477MI

Mailing No. 285152

Mailing Date: August 15, 2003

Translation of Official Action

Japanese Patent Appln. No. 2000-574888

Date of Issued: August 11, 2003

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Article Applied: Patent Law Article 29.(2)

This application should be rejected for the reasons given below. In response, the applicant may file an Argument and/or Amendment within three months from the mailing date.

Reasons

The invention(s) of the claim(s) 1-23 is considered to be readily thought of from the disclosure in the undermentioned publication circulated in Japan or in foreign countries prior to the filing of this application. Therefore, this application falls under the provisions of Article 29.(2) of the Patent Law and thus is not acceptable.

Cited References:

- D1. JP-A-09-512093
- D2. US Pat. No. 5,570,645
- D3. JP-A-09-060801
- D4. JP-A-08-503292
- D5. JP-A-05-052316
- D6. The text of JP Utility Model Appln. No. 61-169023  
corresponding to JP-U-63-074912.

Remarks

1. Claim 1 is rejected on the basis of citations  
D1 and D2.

D1 discloses a method of controlling heat output in a bubbling fluidized bed which comprises a fluidized bed chamber having a fluidized bed therein, the fluidized bed consisting of solid particles, wherein the method comprises:

feeding solid particles on a top surface area of the fluidized bed consisting of solid particles in the fluidized bed chamber, the top surface area being close to a reaction apparatus;

fluidizing the bed consisting of solid particles in the fluidized bed chamber by fluidization gas supplied from a fluidizing device;

cooling the solid particles by a heat exchanger; and

discharging the solid particles from the bubbling fluidized bed, and wherein

excessive solid particles are discharged from the fluidized bed chamber into a reaction chamber through an opening, and solid particles are also discharged from another opening at a discharge channel.

Comparing present claim 1 with the above method disclosed in D1, they are generally identical to each other except for the following point (herein below referred to as "a difference 1"):

while, in the method of claim 1, the solid particles are fed through the guiding channel and the first outlet is formed in the area of the guiding channel, in the invention disclosed in D1, it is not so clear whether there is equipped with a guiding channel.

Considering the difference 1,

(a) D2 discloses a method of controlling a fluidized bed having a heat exchanger vessel in which a recycle pipe (44a) is disposed in a zone divided by a partition (40) and solid particles are discharged from the recycle pipe, and

(b) both the invention disclosed in D2 and the method as defined in present claim 1 are in the common technical field of a heat exchanger in a fluidized bed, and have a common problem to be solved which is to control an amount of solid particles within a heat exchanger.

Therefore, it is obvious for the skilled person to dispose a partition wall in the bubbling fluidized bed chamber of D1 with reference to the disclosure of D2.

2. Claim 2 is rejected on the basis of citations D1 and D2.

Comparing present claim 2 with the invention disclosed in D1, they are generally identical to each other except for the following point (herein below referred to as "a difference 2"):

while, in the method of claim 2, "the area defined by the guiding channel is at most 30%, preferably at most 10%", in the invention disclosed in D1, it is unclear how large the surface area is.

Considering the difference 2, in the invention disclosed in D2, it is obvious for the skilled person to make the cross-sectional area of the divided zone to be at most 30%, preferably at most 10%" by appropriately set the location of the partition.

3. Claim 3 is rejected on the basis of citations D1 and D2.

Comparing present claim 3 with the invention disclosed in D1, they are generally identical to each other except for the difference 1 and the following point (herein below referred to as "a difference 3"):

Considering the difference 3,

(a) D2 discloses a method of controlling a

fluidized bed having the heat exchanger vessel in which the inner space is divided to two zones by the partition (40) and the solid particles move from one zone to the other zone only when the top level of the solid particles becomes higher than that of the partition, and

(b) both the inventions disclosed in D2 and D1 are in the common technical field of a heat exchanger in a fluidized bed, and have a common problem to be solved which is to control an amount of solid particles within a heat exchanger.

Therefore, it is obvious for the skilled person to dispose a partition wall in the bubbling fluidized bed chamber of D1 with reference to the disclosure of D2.

4. Claim 4 is rejected on the basis of citations D1 and D2.

Comparing present claim 4 with the invention disclosed in D1, they are generally identical to each other except for the difference 1.

5. Claim 5 is rejected on the basis of citations D1, D2 and D3.

Comparing present claim 5 with the invention disclosed in D1, they are generally identical to each other except for the difference 1 and the following point (herein below referred to as "a difference 4"):

while, in the method of claim 5, the solid particles are removed from the heat exchanger from below

the surface of the bed of solid particles in the heat exchange chamber through a first adjustable outlet, in the invention disclosed in D1, it is unclear where the outlet is located and whether the outlet is adjustable.

Considering the difference 4,

(a) D3 discloses a method of lowering the load in a fluidized bed combustion apparatus wherein an ash bin is degassed by means of a steam ejector; a heat transfer pipe (13) is provided at the bottom of a combustion furnace; and particles and gas are withdrawn through an ash withdrawal pipe from a bottom side wall which is below the surface of the bed consisting of solid particles (14) and are float-transferred to the ash bin by introducing carrier gas, and

(b) both the inventions disclosed in D1 and D3 are in the common technical field of an apparatus with utilization of a fluidized bed, and have a common problem to be solved which is to control an amount of solid particles in the apparatus.

Therefore, with reference to D3, it is obvious for the skilled person to provide the apparatus of D1 with an opening at the bottom side wall of the babbling fluidized bed chamber and make the opening adjustable with utilization of a steam ejector or the like.

6. Claim 6 is rejected on the basis of citations D1 and D2.

Comparing present claim 6 with the invention

disclosed in D1, they are generally identical to each other except for the difference 1.

7. Claim 7 is rejected on the basis of citations D1 and D2.

Comparing present claim 7 with the invention disclosed in D1, they are generally identical to each other except for the difference 1 and the following point (herein below referred to as "a difference 5"):

while, in the method of claim 7, the heat exchange is adjusted in the heat exchanger by regulating the amount of solid particles passing through the second outlet, in the invention disclosed in D1, it is unclear whether the discharge amount through the opening at the discharge channel is adjustable.

Considering the difference 5,

(a) D2 discloses a method of controlling a fluidized bed having the heat exchanger vessel in which a recycle pipe (44b) is provided at the bottom of the heat exchanger vessel (30) and the amount of solid particles discharged from the recycle pipe is adjusted by means of a control valve (46b), and

(b) both the inventions disclosed in D1 and D2 are in the common technical field of an apparatus with utilization of a fluidized bed, and have a common problem to be solved which is to control an amount of solid particles in the apparatus.

Therefore, with reference to D2, it is obvious

for the skilled person to provide the apparatus of D1 with a control valve at the opening in the discharge channel and make the opening adjustable.

8. Claim 8 is rejected on the basis of citations D1 and D2.

Comparing present claim 8 with the invention disclosed in D1, they are generally identical to each other except for the difference 1.

9. Claim 9 is rejected on the basis of citations D1 and D2.

Comparing present claim 9 with the invention disclosed in D1, they are generally identical to each other except for the difference 1.

10. Claim 10 is rejected on the basis of citations D1 and D2.

Comparing present claim 10 with the invention disclosed in D1, they are generally identical to each other except for the differences 1 and 2.

11. Claim 11 is rejected on the basis of citations D1 and D2.

Comparing present claim 11 with the invention disclosed in D1, they are generally identical to each other except for the differences 1 and 2, and the following point (herein below referred to as "a difference 6"):

while, in the method of claim 11, the area (28') defined by the guiding channel on the upper



surface of the solid particle bed is abutted on a first wall (32) of the heat exchange chamber, in the invention disclosed in D1, it is unclear whether a defined zone is abutted on an inner wall surface of the bubbling fluidized bed chamber.

Considering the difference 6,

(a) D2 discloses a fluidized bed apparatus having the heat exchanger vessel in which a fluidized bed (34a) defined by the partition (40) is abutted on a wall portion of the heat exchanger vessel (30), and

(b) both the inventions disclosed in D1 and D2 are in the common technical field of a heat exchanger of a fluidized bed.

Therefore, with reference to D2, it is obvious for the skilled person to make the defined zone in D1 to be abutted on an inner wall surface of the bubbling fluidized bed chamber.

12. Claims 12 to 23 are rejected on the basis of citations D1 and D2, because the fluidized bed heat exchanger as defined in those claims are disclosed in D1 and D2.